

SWABEY  
OGILVY RENAULT

S E N C

PATENT AND TRADE MARK AGENTS

August 21, 2000

Assistant Commissioner for Patents  
Washington, D.C. 20231  
U. S. A.

Sir:

**Re: New United States Patent Application**  
**Title: SYSTEM AND METHOD FOR**  
**ESTABLISHING LONG DISTANCE CALL**  
**CONNECTIONS USING A DESKTOP**  
**APPLICATION**

**Inventor: Alexander C. LANG**  
**Assignee: Softalk Inc.**  
**Our File: 9-14798-2US MRW:lf**

Transmitted herewith for filing is the patent application of:

**INVENTOR: Alexander C. LANG**

**TITLE OF THE INVENTION: SYSTEM AND METHOD FOR**  
**ESTABLISHING LONG DISTANCE**  
**CALL CONNECTIONS USING A**  
**DESKTOP APPLICATION**

The following documents are enclosed:

- a) Specification/Claims/Abstract with Declaration/Power of Attorney, and Formal Drawings (9 Sheets - Figs. 1-5c)
- b) Assignment in favor of: Softalk Inc.  
with Recordation Form PTO-1595
- c) Small Entity Declarations - (*Independent Inventor*) and (*Small Business Concern*)
- d) Information Disclosure Statement with PTO Form 1449

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KEVIN P. MURPHY  
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ALAN SWABEY [1909-1990]  
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A FIRM IN WHICH SWABEY, MITCHELL,  
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08/22/00

10715 U.S. PTO  
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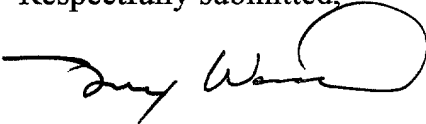
- e) Our cheque No. 006890 and Fee Transmittal Form PTO/SB/17, covering:

filing fee	\$345.00
recording of assignment	\$ 40.00
independent claims in excess of 3 (1 @ \$39)	\$ 39.00
claims in excess of 20 (19 @ \$9)	<u>\$171.00</u>
Total	\$595.00

The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to our Account No. 19-5113.

Please note that the address of the agents for the applicant in this matter should be the Montreal address identified in the enclosed Declaration/Power of Attorney. Correspondence may be directed to Max R. Wood at the Montreal address of Swabey Ogilvy Renault.

Respectfully submitted,



Max R. Wood  
Reg. No. 40,388  
Agent of Record

MRW:lf  
Encls.

006890 T 40388

08/22/00

1c715 U.S. PTO

Approved for use through 09/30/2000. OMB 0651-0032  
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# FEE TRANSMITTAL for FY 2000

Patent fees are subject to annual revision.  
 Small Entity payments must be supported by a small entity statement,  
 otherwise large entity fees must be paid. See Forms PTO/SB/09-12.  
 See 37 C.F.R. §§ 1.27 and 1.28.

TOTAL AMOUNT OF PAYMENT (\$)**595.00**

## Complete if Known

Application Number  
 Filing Date  
 First Named Inventor **Alexander C. LANG**  
 Examiner Name  
 Group / Art Unit  
 Attorney Docket No. **9-14798-2US**

## METHOD OF PAYMENT (check one)

1. ☐ The Commissioner is hereby authorized to charge indicated fees and credit any overpayments to:

Deposit Account Number **19-5113**

Deposit Account Name **Swabey Ogilvy Renault**

☒ Charge Any Additional Fee Required Under 37 CFR §§ 1.16 and 1.17

2. ☒ Payment Enclosed:

☒ Check ☐ Money Order ☐ Other

## FEE CALCULATION

### 1. BASIC FILING FEE

Large Entity Fee Code (\$)	Small Entity Fee Code (\$)	Fee Description	Fee Paid
101 690	201 345	Utility filing fee	345
106 310	206 155	Design filing fee	
107 480	207 240	Plant filing fee	
108 690	208 345	Reissue filing fee	
114 150	214 75	Provisional filing fee	

SUBTOTAL (1) (\$)**345**

### 2. EXTRA CLAIM FEES

Total Claims	Extra Claims	Fee from below	Fee Paid
39	-20** = 19	9	171
4	-3** = 1	39	39
Multiple Dependent		0	0

\*\*or number previously paid, if greater; For Reissues, see below

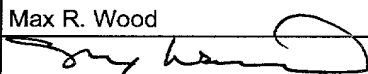
Large Entity Fee Code (\$)	Small Entity Fee Code (\$)	Fee Description
103 18	203 9	Claims in excess of 20
102 78	202 39	Independent claims in excess of 3
104 260	204 130	Multiple dependent claim, if not paid
109 78	209 39	** Reissue independent claims over original patent
110 18	210 9	** Reissue claims in excess of 20 and over original patent

SUBTOTAL (2) (\$)**210**

## FEE CALCULATION (continued)

### 3. ADDITIONAL FEES

Large Entity Fee Code (\$)	Small Entity Fee Code (\$)	Fee Description	Fee Paid
105 130	205 65	Surcharge - late filing fee or oath	
127 50	227 25	Surcharge - late provisional filing fee or cover sheet	
139 130	139 130	Non-English specification	
147 2,520	147 2,520	For filing a request for reexamination	
112 920*	112 920*	Requesting publication of SIR prior to Examiner action	
113 1,840*	113 1,840*	Requesting publication of SIR after Examiner action	
115 110	215 55	Extension for reply within first month	
116 380	216 190	Extension for reply within second month	
117 870	217 435	Extension for reply within third month	
118 1,360	218 680	Extension for reply within fourth month	
128 1,850	228 925	Extension for reply within fifth month	
119 300	219 150	Notice of Appeal	
120 300	220 150	Filing a brief in support of an appeal	
121 260	221 130	Request for oral hearing	
138 1,510	138 1,510	Petition to institute a public use proceeding	
140 110	240 55	Petition to revive - unavoidable	
141 1,210	241 605	Petition to revive - unintentional	
142 1,210	242 605	Utility issue fee (or reissue)	
143 430	243 215	Design issue fee	
144 580	244 290	Plant issue fee	
122 130	122 130	Petitions to the Commissioner	
123 50	123 50	Petitions related to provisional applications	
126 240	126 240	Submission of Information Disclosure Stmt	
581 40	581 40	Recording each patent assignment per property (times number of properties)	40
146 690	246 345	Filing a submission after final rejection (37 CFR § 1.129(a))	
149 690	249 345	For each additional invention to be examined (37 CFR § 1.129(b))	
Other fee (specify) _____			
Other fee (specify) _____			
* Reduced by Basic Filing Fee Paid			
SUBTOTAL (3) (\$) <b>40</b>			

SUBMITTED BY		Complete (if applicable)	
Name (Print/Type)	<b>Max R. Wood</b>	Registration No. (Attorney/Agent)	<b>40,388</b>
Signature		Telephone	<b>613-230-6072</b>
		Date	<b>August 21, 2000</b>

## WARNING:

Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.

Burden Hour Statement: This form is estimated to take 0.2 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

Applicant or Patentee ALEXANDER C. LANG

Serial or Patent No. \_\_\_\_\_

Atty. Dkt. No. 9-14798-2US

Filed or Issued \_\_\_\_\_

For: SYSTEM AND METHOD FOR ESTABLISHING LONG DISTANCE CALL CONNECTIONS USING A DESKTOP APPLICATION

**VERIFIED STATEMENT (DECLARATION) CLAIMING SMALL ENTITY  
STATUS (37 CFR 1.9(f) and 1.27(b)) - INDEPENDENT INVENTOR**

As a below named inventor, I hereby declare that I qualify as an independent inventor as defined in 37 CFR 1.9(c) for purposes of paying reduced fees under section 41(a) and (b) of Title 35, United States Code, to the Patent and Trademark Office with regard to the invention entitled SYSTEM AND METHOD FOR ESTABLISHING LONG DISTANCE CALL CONNECTIONS USING A DESKTOP APPLICATION described in

- (x) the specification filed herewith  
( ) application serial no. , filed  
( ) patent no. , issued

I have not assigned, granted, conveyed or licensed and am under no obligation under contract or law to assign, grant, convey or license, any rights in the invention to any person who could not be classified as an independent inventor under 37 CFR 1.9(c) if that person had made the invention, or to any concern which would not qualify as a small business concern under 37 CFR 1.9(d) or a nonprofit organization under 37 CFR 1.9(e)

Each person, concern or organization to which I have assigned, granted, conveyed, or licensed or am under an obligation under contract or law to assign, grant, convey, or license any rights in the invention is listed below:

- ( ) no such person, concern, or organization  
(x) persons, concerns or organizations listed below\*

\*NOTE Separate verified statements are required from each named person, concern or organization having rights to the invention averring to their status as small entities. (37 CFR 1.27)

FULL NAME SOFTALK INC.

ADDRESS 370 Queens Quay West, Suite 301, Toronto, Ontario, Canada M5V 3J3

( ) INDIVIDUAL (x) SMALL BUSINESS CONCERN ( ) NONPROFIT ORGANIZATION

FULL NAME \_\_\_\_\_

ADDRESS \_\_\_\_\_

( ) INDIVIDUAL ( ) SMALL BUSINESS CONCERN ( ) NONPROFIT ORGANIZATION

I acknowledge the duty to file, in this application or patent, notification of any change in status resulting in loss of entitlement to small entity status prior to paying, or at the time of paying, the earliest of the issue fee or any maintenance fee due after the date on which status as a small entity is no longer appropriate. (37 CFR 1.28(b))

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application, any patent issuing thereon, or any patent to which this verified statement is directed.

**ALEXANDER C. LANG**

NAME OF INVENTOR NAME OF INVENTOR NAME OF INVENTOR

 \_\_\_\_\_

Signature of Inventor Signature of Inventor Signature of Inventor

17 August 2000 \_\_\_\_\_  
Date Date Date

Applicant or Patentee ALEXANDER C. LANG  
Serial or Patent No. \_\_\_\_\_  
Filed or Issued \_\_\_\_\_

Atty's Dkt. No.: 9-14798-2US

Title: SYSTEM AND METHOD FOR ESTABLISHING LONG DISTANCE CALL CONNECTIONS USING A DESKTOP APPLICATION

**VERIFIED STATEMENT (DECLARATION) CLAIMING SMALL ENTITY STATUS  
(37 CFR 1.9(f) & 1.27(c)) - SMALL BUSINESS CONCERN**

I hereby declare that I am

- ☐ the owner of the small business concern identified below:  
☒ an official of the small business concern empowered to act on behalf of the concern identified below:

NAME OF SMALL BUSINESS CONCERN: SOFTALK INC.  
ADDRESS OF SMALL BUSINESS CONCERN: 370 Queens Quay West, Suite 301, Toronto, Ontario, Canada, M5V 3J3

I hereby declare that the above identified small business concern qualifies as a small business concern as defined in 13 CFR 121.12, and reproduced in 37 CFR 1.9(d), for purposes of paying reduced fees to the United States Patent and Trademark Office, in that the number of employees of the concern, including those of its affiliates, does not exceed 500 persons. For purposes of this statement, (1) the number of employees of the business concern is the average over the previous fiscal year of the concern of the persons employed on a full-time, part-time or temporary basis during each of the pay periods of the fiscal year, and (2) concerns are affiliates of each other when either, directly or indirectly, one concern controls or has the power to control the other, or a third party or parties controls or has the power to control both

I hereby declare that rights under contract or law have been conveyed to and remain with the small business concern identified above with regard to the invention, entitled SYSTEM AND METHOD FOR ESTABLISHING LONG DISTANCE CALL CONNECTIONS USING A DESKTOP APPLICATION by inventor(s) ALEXANDER C. LANG described in

- ☒ the specification filed herewith  
☐ application serial no. \_\_\_\_\_ filed \_\_\_\_\_  
☐ patent no. \_\_\_\_\_ issued \_\_\_\_\_

If the rights held by the above identified small business concern are not exclusive, each individual, concern or organization having rights in the invention is listed below and no rights to the invention are held by any person, other than the inventor, who would not qualify as an independent inventor under 37 CFR 1.9(c) if that person made the invention, or by any concern which would not qualify as a small business concern under 37 CFR 1.9(d), or a nonprofit organization under 37 CFR 1.9(e). \*NOTE: Separate verified statements are required from each named person, concern or organization having rights to the invention averring to their status as small entities. (37 CFR 1.27)

NAME \_\_\_\_\_  
ADDRESS \_\_\_\_\_  
☐ INDIVIDUAL ☐ SMALL BUSINESS CONCERN ☐ NONPROFIT ORGANIZATION

I acknowledge the duty to file, in this application or patent, notification of any change in status resulting in loss of entitlement to small entity status prior to paying, or at the time of paying, the earliest of the issue fee or any maintenance fee due after the date on which status as a small entity is no longer appropriate. (37 CFR 1.28(b))

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true, and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application, any patent issuing thereon, or any patent to which this verified statement is directed

NAME OF PERSON SIGNING ALEXANDER C. LANG  
TITLE OF PERSON IF OTHER THAN OWNER PRESIDENT  
ADDRESS OF PERSON SIGNING 46 MCGILL STREET, TORONTO, M5

SIGNATURE: [Signature]  
DATE: 17 August 2000



New Item

**NEW USPTO Desktop Logo Deployment**

Posted Date: 08/30/00

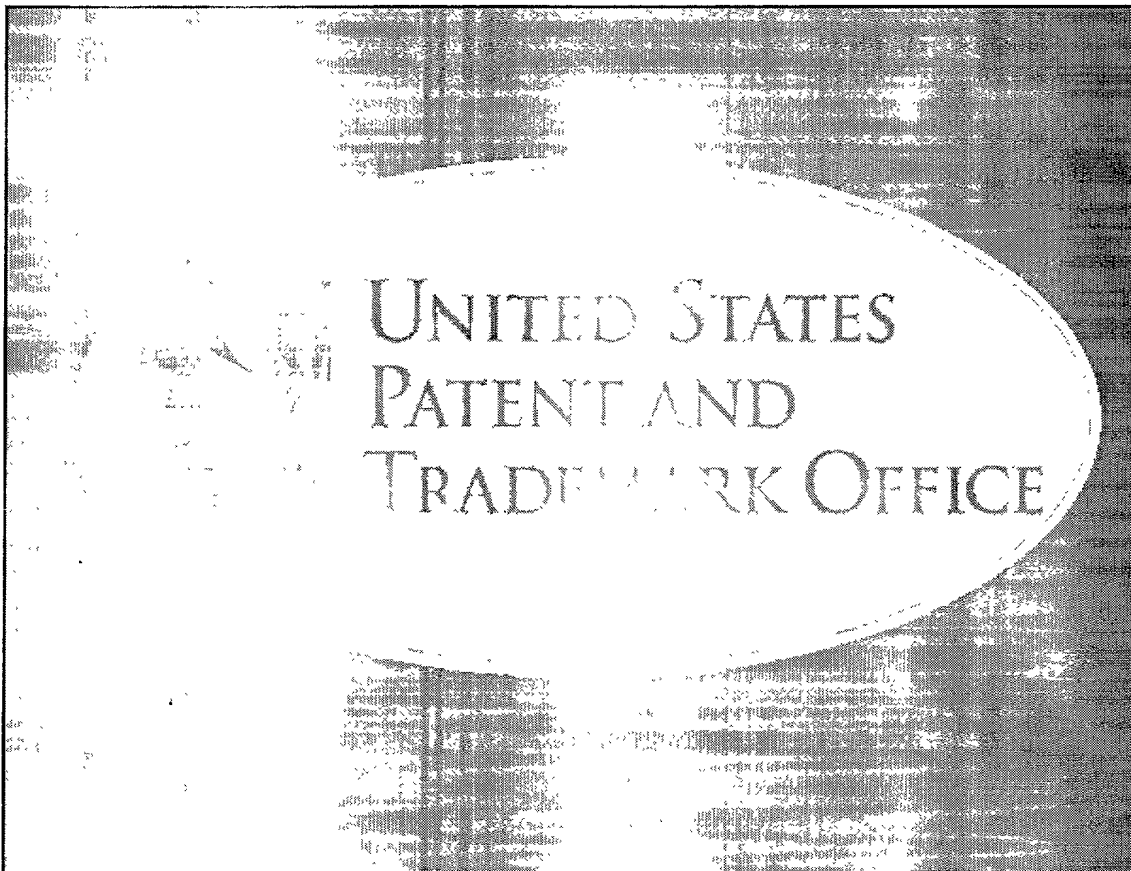
Removal Date: 09/01/00

**New USPTO Desktop Logo**

All employees who did not receive the new desktop logo earlier this month will receive the logo Wednesday, August 30th, at 12:00 a.m. To see if you have the new desktop logo already, do the following:

1. Click on Start | Programs | Accessories | Paint
2. When the Paint application opens, click File | Open and enter  
C:\WINDOWS\SYSTEM32\USPTO\256.BMP

The new logo will look like this:



If you do not have this logo, you have the old desktop logo.

000830-0824960

SYSTEM AND METHOD FOR ESTABLISHING  
LONG DISTANCE CALL CONNECTIONS USING A DESKTOP APPLICATION

**CROSS-REFERENCE TO RELATED APPLICATIONS**

This is the first application filed for the present  
5 invention.

**MICROFICHE APPENDIX**

Not applicable.

**TECHNICAL FIELD**

002280" 1.032200  
10 This invention relates, in general, to a system and  
method for establishing long distance call connections from  
a computer workstation using a packet network, such as the  
Internet. In particular, the invention relates to a system  
and method for establishing a long distance call connection  
between designated call stations using a desktop  
15 application residing on a computer workstation and adapted  
to communicate with a long distance service provider  
server.

**BACKGROUND OF THE INVENTION**

20 Traditional modes of communication have been  
transformed in recent years with the rapid growth of  
Internet-based technologies. However, telephone  
communication is still generally considered the most  
effective mode of communicating because it permits parties  
to conduct two-way high quality voice communication in real  
25 time.

In recent years, several systems have been invented  
for using the Internet to establish telephone connections.

Those systems use Worldwide Web (WWW) technology to permit the setup of PSTN calls. A customer logs on to a WWW server and initiates a call by specifying an origination and a termination number which are passed to a PSTN switch  
5 that initiates two calls to the respective numbers and bridges the calls together. Providers of such services are typically able to offer discount long distance rates because they are not obliged to maintain a great deal of infrastructure in order to offer the service.

10 One system designed to provide long distance telephone connections using the Internet is described in Canadian Patent Application Serial No. 2,248,660 to Wiener et al. which was laid open to public inspection on September 25, 1997. It describes a system for establishing  
15 a telecommunications call between two parties over the PSTN, using the Internet. A customer can access a web-enabled directory service from a computer using the Internet, to retrieve directory information. The directory service is hosted on a web server and includes a directory  
20 website, a directory application accessible via the website and directory database(s). The web server provides interfaces to the user accessing the website, and implements HTTP protocol to serve directory requests. Once a desired party is located in the directory, a  
25 telecommunications call can be requested with that party by selecting the party information. A message including the telecommunication address for the selected party, as well as the telecommunication address for the customer, is sent via the Internet to a control platform. The control  
30 platform provides control signals to a switch located on the PSTN based on the information sent in the message, causing the PSTN to dial the respective addresses identified. In this manner, a telephone connection may be

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effected between parties residing at the identified addresses. The control platform also uses the data contained in the message to forward charging and billing information to a charging and billing module.

5 Another system which employs the Internet to establish long distance telephone call connections through the PSTN is described in copending Canadian Patent Application Serial No. 2,198,024 to Lang et al., which was laid open for public inspection on August 19, 1998. A  
10 registered user can log on to a long distance service provider's website to initiate a long distance call request. Call initiation is effected by completing a call request form by providing appropriate calling information. The calling information is forwarded in a call request  
15 packet to a server operated by the long distance service provider. The long distance service provider server extracts the calling information from the call request packet and forwards an encrypted packet to a call connection control computer for processing. The call  
20 connection control computer decrypts the packet and uses the calling information to instruct a toll switch to set up the call.

A disadvantage of such systems for providing long distance telephone service using the Internet is that the  
25 services can only be accessed using a web browser. They are therefore subject to the speed and efficiency of the WWW, due to the repeated transfer of information over the Internet required to effect each call connection request. In addition, such systems require substantially continuous  
30 access to the WWW if they are to be used for high-volume calling.

In a business environment where employees routinely place long distance calls for business reasons, the reduced rates offered by an Internet-based long distance service provider are appealing. However, given the volume of calls, it can be extremely inefficient to employ a system requiring use of a web browser to effect each call connection request. Furthermore, when a web browser is available to employees, the employees may be inclined to use the web browser for other than business purposes. Consequently, the systems taught by the known prior art are not optimally adapted for use in an office environment.

There therefore exists a need for a system that can harness the power of a packet network, such as the Internet, to establish long distance telephone calls in an efficient, convenient and cost effective manner without requiring the use of a web browser.

#### **SUMMARY OF THE INVENTION**

It is an object of the present invention to provide a system and method for establishing long distance call connections using a packet network in a time effective manner.

It is another object of the present invention to provide a system and method for establishing long distance call connections using the packet network which includes a pre-configured user workstation capable of automatically connecting to a long distance service provider server and identifying a user associated with that workstation.

It is yet another object of the invention to provide a system and method for establishing long distance call connections using the packet network that does not require a web browser.

It is yet another object of the invention to provide a system and method for establishing long distance call connections using the packet network which is adapted to control a user's calling activity.

5           It is a further object of the invention to provide a workstation configured with a desktop application adapted to send a call connection request message to a long distance service provider server to establish a long distance call connection.

10           The invention therefore provides a method of completing a call connection over the public switched telephone network (PSTN) from a desktop application residing on a computer workstation. The method comprises a first step of accepting call request information input by a  
15   user using an interface provided by the desktop application. A call connection request message is then formulated based on the information accepted from the user, and the call connection request message is forwarded over a connection established between the desktop application and  
20   a long distance service provider server to effect call completion.

          The invention also provides a method of completing a call connection over the public switched telephone network (PSTN) from a desktop application operating locally  
25   on a computer workstation and having a communication connection with a long distance service provider server. The method comprises a first step of receiving a call connection request message at the long distance service provider server, sent from said desktop application. The  
30   user identification information contained in said message is verified and the call connection request message is processed to enable a call connection based on call station

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information contained in the message. A notification message is then sent to the desktop application, to notify the desktop application that said call connection is in progress.

5           The invention further provides a system for establishing a long distance call connection between call stations over the PSTN. The system comprises a long distance service provider (LDSP) server adapted to establish a call connection between at least two call  
10 stations in response to a call connection request message sent from a registered user. The system further comprises a desktop application adapted to operate locally on a user workstation to accept input from the registered user defining parameters for establishing the call connection,  
15 and communicate the parameters to the long distance service provider server in the form of a call connection request message. The system also comprises a call controller adapted to receive a call connection information packet from the LDSP server, based on the call connection request  
20 message and instruct a time division multiplexed (TDM) switch to establish a call connection between the at least two call stations.

          The invention further provides a desktop application adapted to operate locally on a user  
25 workstation and establish a communication connection with a long distance service provider (LDSP) server. The desktop application comprises means for accepting call connection information input by a user; means for formulating a call connection request message based on said call connection  
30 information; means for determining if an existing communication connection is available through a packet network to the LDSP server; means for establishing a

communication connection if an existing communication connection is not available; and means for sending the call connection request message to the LDSP server.

In accordance with the present invention, a user can initiate a long distance call connection between call stations from a desktop application that resides and operates locally on a user workstation. For the purpose of the present invention, a desktop application that resides and operates locally will be understood to mean a stand-alone desktop application residing on a user workstation that is capable of operating without the functionality of a web browser application. A desktop application may be configured for a specific, repeat user, or configured with a mandatory user verification procedure. If the desktop application is configured for a repeat user, user registration information is automatically sent to a long distance service provider server with each call connection request. In this manner, a user is not required to enter user information each time a call connection is requested. The desktop application may also be configured to automatically establish a connection to a long distance service provider server when a call connection request is effected from the desktop application. A time saving is thus realized by the user, because the locally operated desktop application automatically performs connection procedures and logon messaging. The connection established with the long distance service provider server may be any packet network connection, such as a standard Internet connection. The desktop application enables a workstation to effect a long distance call connection via a long distance service provider server (LDSP) without the use of a web browser. Consequently, the desktop application in accordance with the invention may be configured to permit a

user to make long distance calls without providing the user with the capability for accessing the WWW.

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The desktop application of the present invention preferably includes call request and directory features, and may be enhanced with web-enabled features provided via a service provider website if the user workstation is equipped with a web browser application. Additional long distance call connection features may be enabled via the web browser in conjunction with the features provided by the desktop application of the present invention. As such, additional features are accessible via a user workstation equipped with a web browser application, without limiting the speed and efficiency of the desktop application.

A system of the present invention provides a desktop application configured to contact an LDSP server when a call connection is requested. The desktop application preferably includes only modules required to enable a call connection request to the LDSP server. Accordingly, the desktop application of the present invention functions efficiently on a workstation to effect a long distance call request between designated parties having call station addresses.

The system of the present invention is capable of processing call connection requests more quickly than web-enabled systems, as a direct connection between a user's workstation and an LDSP server is established to initiate a call connection request. Further, if a dedicated packet network connection is not available when a request is initiated, the desktop application may be configured to automatically establish an appropriate connection, thus eliminating the need for a user to initiate a dial-up or logon procedure. In the case where a workstation is

supported on an LAN or a digital subscriber line (DSL) link that supports a dedicated Internet connection, a call connection request may be enabled by connecting to the LDSP server via the dedicated connection and automatically  
5 identifying a user request using registration information stored by the application. The desktop application of the present invention may be configured to automatically provide user registration information to an LDSP server irrespective of the type of connection established.

10 Further, if a user does not require the added functionality of web-enabled features provided by a service provider web server, a workstation supporting the application of the present invention is preferably configured to connect with the LDSP server via the Internet  
15 without a web browser. A user employing the workstation is therefore inhibited from accessing the WWW. Accordingly, the present invention provides an efficient and controlled system for establishing long distance call connections over the PSTN via the packet network.

20 **BRIEF DESCRIPTION OF THE DRAWINGS**

Further features and advantages of the present invention will become apparent from the following detailed description, taken in combination with the appended drawings, in which:

25 FIG. 1 is a schematic diagram of the arrangement of components in one exemplary system in accordance with the present invention;

FIG. 2 is an illustration of a graphic user interface (GUI) of a desktop application in accordance with  
30 the present invention;

FIG. 3 is a schematic diagram of the communication pathways used by components in a system in accordance with the present invention;

FIG. 4a is a flow chart illustrating an information  
5 processing procedure performed by a desktop application in accordance with the present invention;

FIG. 4b is a flow chart illustrating an information processing procedure performed by a long distance service provider server application in accordance with the present  
10 invention;

FIG. 4c is a flow chart illustrating another information processing procedure performed by a desktop application in accordance with the present invention;

FIG. 5a is a flow chart illustrating a directory  
15 update procedure performed by a desktop application in accordance with the present invention;

FIG. 5b is a flow chart illustrating a directory update procedure performed by a long distance service provider server application in accordance with the present  
20 invention; and

FIG. 5c is a flow chart illustrating another directory update procedure performed by a desktop application in accordance with the present invention.

It will be noted that throughout the appended  
25 drawings, like features are identified by like reference numerals.

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**DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT**

The present invention provides a system for establishing long distance call connections via a data packet network. The long distance call connections are established between call stations connected to the public switched telephone network (PSTN) by a long distance service provider (LDSP) server that receives instructions via the data packet network from a desktop application that resides and operates locally on a user workstation and does not require an Internet connection or web browser functionality.

FIG. 1 shows an overview of an exemplary system for completing a long distance call connection in accordance with one embodiment of the present invention. A call connection between call stations 10, 20, telephones for example, may be initiated by a user, from a pre-configured computer workstation 30, 31. Workstations 30, 31 are configured with a desktop application 40 adapted to connect with an LDSP server 60, via a packet network 100, such as the Internet, X.25, asynchronous transfer mode (ATM) or the like. In the embodiment shown in FIG. 1, workstations 30, 31 are connected to a LAN 35, which has access to the packet network 100. A plurality of workstations 30, 31 may be configured to connect with LDSP server 60 to initiate long distance call connections over the PSTN 200. As evident to one skilled in the art, a single LAN 35, or a wide area network (WAN) 39, supporting communications between LANs 35 and 37, may be configured to provide workstations 30, 31 with access to LDSP server 60. Alternatively, users may access the LDSP server 60 from stand-alone workstations. Thus, a company, for example, may register with the LDSP to provide designated employees with facilities for making long distance calls from the

pre-configured workstations 30, 31. In addition, the LDSP server 60 may be configured to identify specific users associated with a given organization, and check a corresponding rule base specifying the request limitations of each user each time a call connection request is made. For example, a rule base may restrict a specific user's access to call connection requests designating a call station having a particular area code, or country code. Such restrictions can be used to limit a user's ability to establish call connections to those areas most often called for business purposes. A time or charge control feature may also be built using the rule base on LDSP server 60 for tracking the long distance charges incurred by a user. When a predetermined set amount of long distance charges have been incurred, a notification message may be sent to an administrator advising of the activity of that user. With such a control in place, an indication of unusually high levels of activity can be provided. In this manner, client side control features may be built in to the system of the present invention, to control and track the activity of a plurality of selected subscribers.

When a user registers with the long distance service provider for the service enabled by the present invention, a call completion application 40 is installed on computer workstations 30, 31 for use by authorized users, also referred to as "calling parties". Application 40 is configured at each workstation 30, 31 to contact the LDSP server 60 when a call connection between two call stations, 10, 20, for example, is desired. Contact with LDSP server 60 may be made via an existing packet network connection, or the application 40 may automatically establish a packet network connection for this purpose. Call completion application 40 provides call request

capabilities that permit an application user to quickly and conveniently launch a call connection request from a configured workstation 30, 31. Access to the LDSP 60 may be achieved through any known type of packet network  
5 connection, and in the instance where computer workstations 30, 31 are supported by a local area network (LAN) 35, the packet network connection is commonly a dedicated Internet connection.

It is a known practice for a long distance service  
10 provider (LDSP) to provide registered users with access to PSTN toll services via the Internet. In doing so, a call controller 70 is interfaced by a signaling line with a PSTN toll switch 80 and controls connections made through the PSTN by the toll switch 80. The PSTN toll switch 80 is  
15 typically a time division multiplexed (TDM) toll switch. In response to a call connection request message, a call connection information packet is dispatched by LDSP server 60 to a call controller 70. Call controller 70 deciphers the call connection information packet and  
20 instructs toll switch 80 to initiate a first call to the calling party telephone 10 served by line 84. The call controller 70 then instructs the toll switch 80 to establish a second call to the called party telephone 20 served by line 82. If the first call is answered, the call  
25 controller 70 proceeds to instruct the toll switch 80 to establish a call connection between the first and second calls. It will be understood by those skilled in the art that details such as the PSTN Common Channel Signaling Network (typically an SS7 signaling network) are not  
30 illustrated for the purpose of clarity. It will be further understood by those skilled in the art that while only one LDSP server 60 and one call controller 70 are illustrated, a plurality of such servers and call controllers may be

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utilized for establishing long distance voice communication between parties.

As shown in FIG. 1, a calling party located at a pre-configured workstations 30, 31 may use call completion application 40 to input information required to identify the parties between which a long distance call connection is to be established. A dial feature of application 40 may be used to initiate a call connection request based on the information input.

When a call connection is initiated using desktop application 40, the desktop application 40 formulates a call connection request message, and the necessary communication connections between workstation 30, 31 and the LDSP server 60 are automatically established. A call connection request message preferably includes user identification information sent via the communication connection with the LDSP server 60. If so, a user verification procedure is conducted, and if the user identification information is determined to be valid a message authorizing the application 40 to proceed with the call connection request is returned to the desktop application 40 via the communication connection. In response to this message, the desktop application 40 forwards call connection request information to the LDSP server 60. At the LDSP server 60, information packets contained in the call connection request message are extracted and processed by various components of the LDSP server 60. As a result of such processing, a call connection information packet is dispatched to the call controller 70 and the toll switch 80 is instructed to connect the designated call stations. Communication connections between the LDSP server 60 and the call

controller 70 may be established according to a number of methods known in the art. For example, a direct connection 62 such as an Ethernet connection may support communication between LDSP server 60 and call controller 70. In this case, TDM toll switch 80 may also support an Ethernet connection. Alternatively, the packet network 100 may be used to connect LDSP server 60 and the call controller 70 for transmission of call connection information packets therebetween.

10 Desktop application 40 provides a graphical user interface (GUI) having built-in functionality for establishing call connections between call stations 10, 20 over the PSTN without the use of an Internet browser. The GUI 50, illustrated in FIG. 2, provides a calling party with convenient and efficient means for initiating a call connection request. In particular, desktop application 40 eliminates the requirement to logon to an LDSP website and download a call connection webpage each time a call connection is desired. A calling party can input the necessary details pertaining to a called party with whom a call connection is desired using the GUI 50, and enable a call connection request by selecting a dial feature, for example a dial icon 58. Desktop application 40 may be configured to include stored user identification information which is automatically sent to the LDSP server 60 when a call connection request is initiated.

As shown in FIG. 2, GUI 50 is adapted to accept call station information in call station fields 22, 24 for identifying the call stations between which a call connection is desired. Typically, a user will be party to the call connection requested, and call station information pertaining to a call station in close proximity to a user's

5 application 40 may be configured in any format adapted to provide a user with the features and functionality of the present invention. The features of application 40 may be provided in any number of user interfaces, and may be in any suitable form known in the art of GUI design. For  
10 example, features of application 40 may be provided in pull-down menu format or as icons within a user interface.

15 numbers or called party names, as shown in call station  
fields 22 and 24, respectively. If information pertaining  
to a desired called party is stored in a directory file of  
application 40, the required call station information may  
be selected for insertion into a call station field 22, 24  
20 of GUI 50. A called party directory may be provided as a  
pull down menu in the proximity of call station  
fields 22, 24, or in any other suitable format known in the  
art. In addition, the GUI 50 may be configured to include  
default calling station information in a calling station  
25 field 22 corresponding to a user's call station, when a  
user is routinely requesting call connections, involving  
his or her designated call station. Alternatively, call  
station information may be manually entered from a  
corresponding workstation 30, 31 and a call connection  
30 request or "dial" feature 58 selected to enable a call  
connection request. Further, call station information  
pertaining to a user's most frequently requested call  
stations may be programmed into a speed dial directory 52

and quickly accessed from GUI 50 for enabling an instant call connection request.

Once the appropriate call station information is supplied in call station fields 22, 24 of application 40, dial feature 58 may be selected, to initiate a call connection request. Dial feature 58 initiates the procedure for establishing a long distance call connection between the designated call stations, as will be discussed in more detail below. In essence, selection of the dial feature 58 prompts desktop application 40 to formulate a call connection request message based on the specified information input to establish a communication connection with the LDSP server 60.

GUI 50 preferably includes an information display window 26 for displaying status information associated with a call connection request. Information display window 26 may provide a medium for displaying a notification message received from a LDSP server 60 via communication connections, indicating the status of the call connection request at the server side. A tool bar 63 for initiating additional features provided by application 40 may also be enabled in the GUI 50. The features displayed in tool bar 63, as well as most features available in GUI 50, may be inactivated using configuration options provided by application 40. Alternatively, feature icons displayed in GUI 50 may be inactivated by default where the systems of a workstation supporting desktop application 40 are not compatible or complete. For example, a feature displayed in GUI 50 may be a web-enabled feature, supported by the LDSP web server 60 (FIG. 1). If a workstation supporting desktop application 40 is not equipped with a web browser adapted for connection to the LDSP web server, then the

web-enabled features of GUI 50 will not be accessible to that user, from that particular workstation.

Tool bar 63 may provide access to web-enabled features of the present invention compatible with desktop application 40. These web-enabled features are preferably supported by a corresponding LDSP web server 65, and may be accessed by a registered user from any workstation having Internet access and a web browser application. When an icon is selected from tool bar 63, a compatible web-browser is launched and a webpage is downloaded to the user workstation. The webpage may include a form into which the user inputs information required to enable the selected feature. The completed form is then uploaded from the user workstation to the web server and the web-enabled feature is activated. Each web-enabled form may require a user to input user identification information to ensure that the user is authorized to initiate the requested web-enabled feature.

The web-enabled features preferably support complex features and data presentation capabilities of the present invention. For example, web-enabled features may include conference calling, country code and time zone information display, long distance rate searches, and account editing capabilities. These web-enabled features are made available via the LDSP web server 65 to registered users. Other commonly used features, such as directory files and call connection requests, are locally available to a user workstation 30, 31, for fast and easy access. As a result, local system resource usage is kept to a minimum and call connection requests can be conveniently and quickly initiated from a user's workstation.



In addition, a user may be required to input web server user identification to gain access to the respective web-enabled features of the present invention. As a result, web-enabled features of the present invention may  
5 be disabled for any given user.

User identification information can be stored by desktop application 40 and sent to an LDSP server 60 with each call connection request if the desktop application 40 is pre-configured to store logon information for connecting  
10 to LDSP server 60. For example, in order to use the system of the present invention to establish long distance call connections, a calling party must be a registered user recognized by the LDSP server 60. User specific identification information sent to LDSP server 60 with each  
15 call connection request message identifies the user and permits the LDSP server 60 to validate the incoming request, determine whether an associated user account is in good standing, and process and bill the transaction accordingly. Consequently, each registered user is  
20 assigned unique user identification information that is stored on LDSP server 60 and used to verify each call connection request. Each time a registered user initiates a call connection request, the user identification information is checked to determine whether the user is  
25 still in good standing before the call connection request is processed. In this manner, user access to the LDSP server 60 can be denied if an account is determined to be overdue, for example.

FIG. 3 provides a detailed overview of the system  
30 in accordance with a preferred embodiment of the present invention. As illustrated, the system of the present invention may be described as a three-tier system utilizing

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The call server component 68 is configured to communicate with the call controller 70, and web server component 65, when applicable. The call server 68 is not necessarily configured to directly process client side call connection requests. By providing a transaction server 75 on the provider side, an interpretation step can be handled by the transaction server 75 before the request is passed to the call server 68 for processing. As shown in FIG. 3, the desktop application 40 is configured to generate call connection request messages at a user workstation 30, 31 and send those messages to the LDSP server 60. Each call connection request message is sent from desktop application 40 to transaction server 75 where it is formatted for processing by call server 68. The processing steps performed by call server 68 preferably include steps of user verification, billing transactions which may include credit card authorization, and call connection. Messages exchanged between desktop application 40 and transaction server 75 may comply with any protocol compatible with desktop application 40 and transaction server 75, for example, an object oriented packet messaging protocol. In accordance with a preferred embodiment of the invention, transaction server 75 is a Microsoft transaction server as provided by Microsoft Corp.<sup>®</sup>, and application 40 is configured to generate call connection request messages utilizing a Distributed Component Object Model (DCOM) protocol. In accordance with the preferred embodiment, a new DCOM object is created each time a call connection request message is formulated by application 40, and sent to transaction server 75, where it is converted into a suitable format for processing by call server 68.

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Alternatively, compulsory logon may be disabled to improve convenience and efficiency.

At step 130, desktop application 40 determines if a packet network connection is available for establishing a connection with LDSP server 60. If the packet network connection is located, application 40 proceeds to establish a communications connection with the LDSP server 60 via the packet network (step 140). A communications connection may be established using any suitable protocol for providing a messaging service between workstations 30, 31 running desktop application 40 and the LDSP server 60. For example, Distributed Component Object Model (DCOM) may be employed to enable messaging between a workstation 30, 31 and the LDSP server 60. DCOM is designed for use across multiple network transports, including Internet protocols such as TCP and HTTP, and enables Component Object Model (COM) software components to communicate directly over a packet network. If a packet network connection is not found, a packet network connection is automatically established by desktop application 40 at step 135, before proceeding to step 140. A packet network connection may be established in step 135 in accordance with any known method. After the appropriate connections are established (steps 135, 140), desktop application 40 sends an encrypted logon information message to the LDSP server 60 (step 145). The logon information contained in this message is retrieved from storage by application 40 if the compulsory logon feature is disabled.

FIG. 4b illustrates the principal steps performed at LDSP server 60 in response to a call connection request initiated by desktop application 40. An encrypted logon information message is received from application 40 and

subsequently decrypted and verified by the LDSP server 60 (step 150). Decryption and verification of a logon information message may be performed in any number of ways known in the art for maintaining a secure system accessible only to registered users. Verification may be performed by LDSP server 60 by checking user identification information contained in the logon information message against user identification information stored in a user database 250 (FIG. 3) associated with the LDSP server 60. A user's identification information is preferably also processed to identify a corresponding account number and the status of that account is determined. An account database storing account information corresponding to each registered user is preferably maintained. If the user identification validation performed at step 150 fails, a series of retry steps may be initiated (steps 160-164), if the LDSP server 60 is configured to permit logon retries as determined at step 158. If so, a retry message is sent to desktop application 40 (step 160) and a retry counter is incremented (step 162). Unless a maximum number of retries has not been attempted (step 164), another logon attempt is made from desktop application 40 and LDSP server 60 returns to step 150. If a predetermined maximum number of retry steps are performed without success, the call connection request is denied (step 166), and a denied request message is sent to application 40 (step 168). A denied request message may specify why a request was denied, for example, "user identification information not recognized", "credit card not accepted" or "credit limit exceeded". When a denied request message is generated and sent to application 40, the call connection processing procedure of the LDSP server is terminated (step 170).

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If the logon information in step 155 is determined to be valid, the procedure for establishing a call connection continues with the LDSP server 60 sending a message instructing application 40 to proceed with the request (step 175). In response to this message, at step 180, call request information is received from desktop application 40 containing the call request information entered in step 110. Upon receipt at LDSP server 60, the call request information is reformatted and processed (step 185). The processed information is sent via a call connection information packet to a call controller 70 (step 190). The call controller 70 processes the call connection information packet and sends instructions to a TDM switch 80 through which the call connection will be established (step 192). The communications between the LDSP server 60 and the call controller 70 are preferably effected using a protocol such as PPTP (point-to-point tunneling protocol) to increase the level of security. In addition, call controller 70 is preferably provided with software filters well known in the art to ensure that only packets originating from a recognized LDSP server are accepted as valid call connection packets. A notification or call status message is generated by the LDSP server 60 and sent to desktop application 40 at step 194, indicating that the call connection is in progress.

FIG. 4c illustrates the principal steps preferably performed by desktop application 40 at a user workstation in response to a call status message sent in step 194. The call status message is received by desktop application 40 and a call status message displayed in an information display window 26 (FIG. 2) provided in GUI 50 (step 195). Desktop application 40 then proceeds to release the communication connection established between the

workstation and the LDSP server 60 (step 196) and determines (step 197) whether a packet network connection was established at step 130. If a packet network connection was not established by the desktop  
5 application 40, no further action is taken and the procedure ends at step 199. Alternatively, if it is determined that a packet network connection was established by the desktop application at step 130, then that connection is closed (step 198), and the procedure is ended  
10 (step 199).

After the call request information has been provided to the TDM toll switch 80 (FIG. 3) by call controller 70, a call connection is established between call stations 10, 20 in accordance with procedures  
15 described in applicant's copending United States Patent Application No. 08/811,099 filed on March 3, 1997, the specification of which is incorporated herein by reference. That is, once the required call station information has been provided, call controller 70 instructs the TDM toll  
20 switch 80 to place a first call to the calling party, a second call to the called party, and to conference the two calls together after the first call is answered.

According to a preferred embodiment of the invention, bi-directional updates to directory files stored  
25 on the user workstation and the LDSP server, are performed to enable traveling users to have their directories available when accessing the service using a web browser interface. FIGs. 5a, 5b and 5c illustrate the steps involved in a bi-directional directory update procedure in  
30 accordance with the invention. Directory files stored on a user workstation are synchronized with corresponding server side directory files each time either directory is updated



to ensure that the user's directory files are mirrored in each location. This permits a user to access the most up-to-date records from his or her workstation as well as from a remote access to the web server component 65. When a directory update is on the LDSP server 60 by a web user or an administrator, a synchronization feature is automatically enabled to ensure that the corresponding client side directory files are updated on next logon from the user's workstation 30.

FIG. 5a illustrates the principal steps in a preferred method for updating directory files from a user's workstation. Desktop application 40 preferably includes features to enable editing of directory files locally stored on a user's workstation. Updates to a user's directory may be made by selecting a directory edit feature from GUI 50, and entering the appropriate directory information (step 405). After the updated information has been entered, a synchronization feature may be selected from GUI 50 to initiate the directory update procedure (step 410). This procedure includes establishing a connection with LDSP server 60, as described above with respect to completing a call request, to obtain authorization and to synchronize the LDSP server directory with the desktop application directory files that were updated. At step 415, a connection with LDSP server 60 is initiated by determining if a compulsory logon feature is enabled. If enabled, a user must input his or her logon information to proceed (step 420). Otherwise, application 40 proceeds to determine if a packet network connection is available (step 425). If a packet network connection is available, desktop application 40 establishes a communication connection with the LDSP server 60 (step 425). Otherwise, the packet network connection is

5           As shown in FIG. 5b, at step 445, a logon information message is received, decrypted and verified by LDSP server 60. At step 450, LDSP server 60 determines if the logon information is valid. If not, a series of retry steps may be executed, as described above, and illustrated in FIG. 4b. If the logon information is determined to be valid, a message instructing the desktop application 40 to proceed is sent at step 455. In response to a message sent in step 455, a directory update request message is returned to the LDSP server at step 460, based on the updated information provided to desktop application 40 in step 405. At step 465, it is determined whether the directory update request is valid. This determination will be based on the level of authorization identified for the particular user, as well as the nature of the directory information to be updated. For example, a user may be restricted to requesting call connections within an assigned calling area or areas, having designated area codes. If an attempt is made to update a user's directory files to include call station information which is outside a user's assigned calling area, then the update request is denied, and a corresponding message is sent to desktop application 40 (step 470). In response to a message received from LDSP server 60 denying an update request, a connection release process is performed by desktop application 40, as illustrated by steps 490 to 510, of Fig. 5c. If an update request is valid, corresponding directory files on the LDSP server 60 are updated and stored (step 475). When the LDSP server directory files are updated in response to an update

request, an approval message is sent from the server to the user workstation (step 480).

FIG. 5c illustrates the principal steps performed by desktop application 40 in response to receipt of the approval message sent by the LDSP server 60. On receipt of the message sent in step 480, the client side directory files are updated accordingly and stored on desktop application 40 (step 485). Following the update procedure of step 485, the communication connection with the LDSP server 60 is released (step 490). It is then determined, at step 495, whether a packet network connection was established for the purpose of sending the update request (step 430). If so, the connection is closed (step 500) and the update procedure is ended (step 510). Likewise, if an update denied message is received at step 470 in response to the directory update request, the procedure jumps to step 490 and the necessary connections are released and closed, to complete the procedure (steps 495-510).

With each logon procedure described above with reference to FIGs. 4a-c, a directory update check may be performed after the logon information has been verified, to determine if directory files updated on the LDSP server 60 need to be sent to the user workstation for incorporation into directories used by desktop application 40.

The system of the present invention provides a desktop application 40 adapted to communicate with an LDSP server 60 to establish long distance call connections between call stations over the PSTN. Desktop application 40 provides a registered LDSP user with a convenient and efficient tool for initiating a call request. The desktop application 40 enables a call connection request to be quickly initiated from a user

workstation, permitting a user to perform other tasks while waiting for notification from a call station that a call connection has been established.

The embodiments of the invention described above  
5 are intended to be exemplary only. The scope of the  
invention is therefore intended to be limited solely by the  
scope of the appended claims.

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**I/WE CLAIM:**

1. A method of completing a call connection over the public switched telephone network (PSTN) from a desktop application residing on a computer workstation, said method comprising:
  - a) accepting call request information input by a user using an interface provided by the desktop application;
  - b) formulating a call connection request message based on said information accepted from said user; and
  - c) forwarding the call connection request message over a connection established between the desktop application and a long distance service provider server to effect call completion.
2. The method as claimed in claim 1, wherein formulating a call connection request message is initiated when the user enables an application feature available on said interface.
3. The method as claimed in claim 1, wherein inputting call request information includes selecting call station information from a directory stored on said workstation.
4. The method as claimed in claim 2, wherein said application feature prompts the desktop application to retrieve predetermined call station information and forward said call connection request message.

5. The method as claimed in claim 1, wherein forwarding the call connection request message includes a step of determining whether a packet network connection is available to the workstation and, if the packet network connection is not available, establishing the packet network connection prior to sending the request.
6. The method as claimed in claim 3, wherein said call station information is stored in said directory in association with a call party name.
7. The method as claimed in claim 5, wherein said connection established between said user workstation and said long distance service provider server includes the packet network connection and a server-specific communication connection.
8. The method as claimed in claim 7, wherein said server-specific communication connection uses Distributed Component Object Model (DCOM) protocol.
9. The method as claimed in claim 7, further comprising a step of releasing at least the server-specific connection between said long distance service provider server and said desktop application when a call status message indicating that the call request is being processed, is received from said long distance service provider server.
10. The method as claimed in claim 9, further comprising a step of releasing the packet network connection if it is determined that the packet network connection was established by said desktop application.

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11. The method as claimed in claim 5, wherein forwarding the call connection request message includes a step of forwarding a first message containing user identification information.
12. The method as claimed in claim 11, further comprising steps of:
  - a) receiving a confirmation message from said long distance service provider server confirming said user identification information; and
  - b) forwarding a call request message containing call station information.
13. A method of completing a call connection over the public switched telephone network (PSTN) from a desktop application operating locally on a computer workstation having a communication connection with a long distance service provider server, said method comprising steps of:
  - a) receiving a call connection request message at said long distance service provider server, sent from said desktop application;
  - b) verifying user identification information contained in said message;
  - c) processing said call connection request message to enable a call connection based on call station information contained in said message; and
  - d) sending a notification message to the desktop application, to notify the desktop application that said call connection is in progress.

14. The method as claimed in claim 13, wherein the step of processing said call connection request message further comprises steps of:
- a) formulating a call request packet based on said call station information; and
  - b) forwarding said call request packet to a call controller connected to a time division multiplexed (TDM) switch, for effecting a call connection between call stations identified in said call connection request message.
15. A method of completing a call connection as claimed in claim 13, wherein said step of receiving a call connection request message further comprises steps of:
- a) receiving a first message from said desktop application containing user identification information;
  - b) sending a confirmation message to said desktop application authorizing said user identification information; and
  - c) receiving a second message from said desktop application containing call station information identifying call station locations to be joined by a call connection.
16. A system for establishing a long distance call connection between call stations over the PSTN, said system comprising:
- a) a long distance service provider (LDSP) server adapted to establish a call connection between at least two call stations in response to a call

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connection request message sent from a registered user;

- b) a desktop application adapted to operate locally on a user workstation to accept input from said registered user defining parameters for establishing said call connection, and communicate said parameters to said long distance service provider server in the form of a call connection request message; and
- c) a call controller adapted to receive a call connection information packet from said LDSP server, based on said call connection request message and instruct a time division multiplexed (TDM) switch to establish a call connection between said at least two call stations.

17. The system as claimed in claim 16, wherein said desktop application includes means for establishing a communication connection with said LDSP server for communicating said call connection request message.
18. The system as claimed in claim 17, wherein said means for establishing a communication connection includes means for determining if an existing packet network connection is available, and if not, establishing a packet network connection.
19. The system as claimed in claim 18, wherein said means for establishing a communication connection further comprises means for establishing a communication connection compatible with said LDSP server.

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20. The system as claimed in claim 19, wherein said communication connection is established using a Distributed Component Object Model (DCOM) protocols.
21. The system as claimed in claim 16, wherein said desktop application supports a call station directory.
22. The system as claimed in claim 16, wherein said desktop application supports a programmable speed dial feature.
23. The system as claimed in claim 16, wherein said desktop application further includes means for closing said packet network and communication connections when a message notifying that the call connection is in progress is received from said LDSP server.
24. The system as claimed in claim 16, wherein said desktop application further comprises means for encrypting call connection request messages.
25. The system as claimed in claim 16, wherein said LDSP server further comprises of a transaction component, a call connection component and a web server component.
26. The system as claimed in claim 25, wherein said transaction component further comprises:
  - a) means for receiving a call connection request message from said desktop application;
  - b) means for decrypting said call connection request message; and

c) means for formatting said call connection request message for processing by said call connection component.

27. The system as claimed in claim 16, wherein said desktop application further comprises:

a) means for enabling call connection features on the LDSP web server.

28. The system as claimed in claim 27, wherein said means for enabling call connection features includes enabling a web browser application on said user workstation.

29. The system as claimed in claim 16, wherein said LDSP server further comprises a user database.

30. The system as claimed in claim 29, wherein said user database stores user directory files.

31. The system as claimed in claim 30, further including means for synchronizing directory files residing on the user workstation with directory files associated with the LDSP.

32. The system as claimed in claim 30, wherein when said user directory files are updated using a web browser application, a corresponding update to directory files residing on the user workstation is automatically performed when a communication connection with said LDSP server is established from said desktop application.

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33. The system as claimed in claim 29, wherein said user database stores user account information.
34. A desktop application adapted to operate locally on a user workstation and establish a communication connection with a long distance service provider (LDSP) server comprising:
- a) means for accepting call connection information input by a user;
  - b) means for formulating a call connection request message based on said call connection information;
  - c) means for determining if an existing packet network connection is available;
  - d) means for establishing a packet network connection if an existing packet network connection is not available to support said communication connection; and
  - e) means for sending said call connection request message to said LDSP server.
35. A desktop application as claimed in claim 34, wherein said means for receiving call connection information is a graphical user interface.
36. A desktop application as claimed in claim 34, wherein said means for sending said call connection request message further comprises means for sending user identification information to said LDSP server for verification.

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37. A desktop application as claimed in claim 34, further comprising means for closing said communication connection after a call connection is initiated.
38. A computer-readable memory storing the desktop application as claimed in claim 34.
39. A desktop application as claimed in claim 34 further comprising:
  - a) means for updating a call directory supported by said desktop application; and
  - b) means for effecting a corresponding update to a user directory supported by said LDSP server.

Table 1. Demographic characteristics of the study population	
Age (years)	65.2 (SD 8.5)
Gender	
Male	55.2%
Female	44.8%
Education (years)	12.5 (SD 2.1)
Marital status	
Married	68.5%
Widowed	22.1%
Divorced	8.3%
Single	1.1%
Income (USD/month)	1,250 (SD 350)
Health status	
Good	72.3%
Fair	18.7%
Poor	8.0%
Comorbidities	
Hypertension	45.6%
Diabetes	32.1%
Cholesterol	28.9%
Arthritis	15.4%
Depression	12.7%
Medication use	
Yes	65.8%
No	34.2%
Smoking status	
Current	10.5%
Former	25.3%
Never	64.2%
Alcohol consumption	
Regular	8.2%
Occasional	15.6%
Never	76.2%

A system and method for establishing a long distance call connection between call stations over the PSTN initiates a call connection request from a desktop application adapted to operate locally on a user workstation. The desktop application communicates call connection information to a long distance service provider server without requiring a web browser when a request is initiated by a user. Call connection information is processed by the long distance service provider server and an information packet is sent to a call controller, to effect a call connection over the PSTN via a TDM toll switch. A communication connection with the long distance service provider server is automatically established by the desktop application when a request is initiated, and subsequently released when the call connection request is received and processed by the long distance service provider.

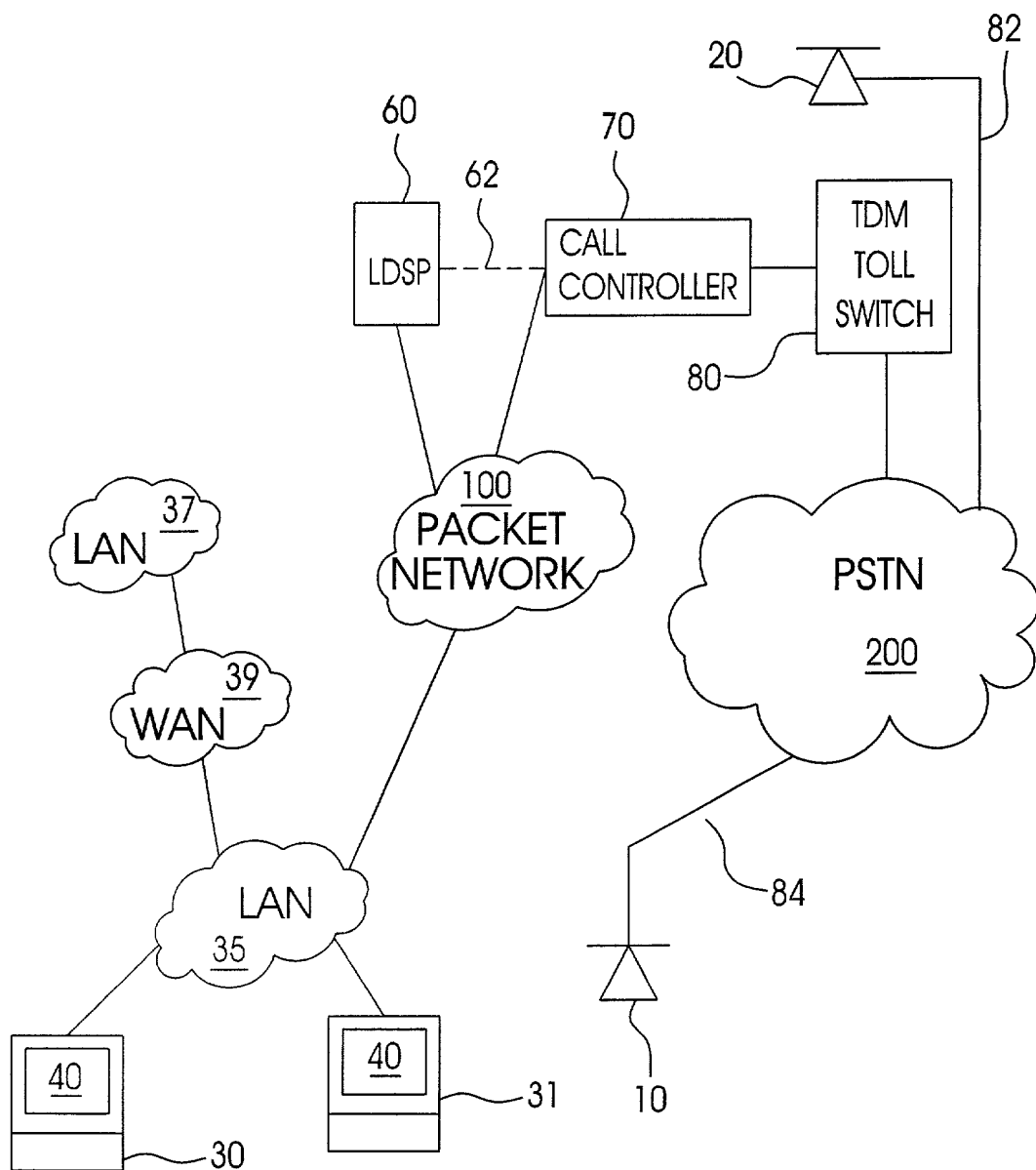


FIG. 1

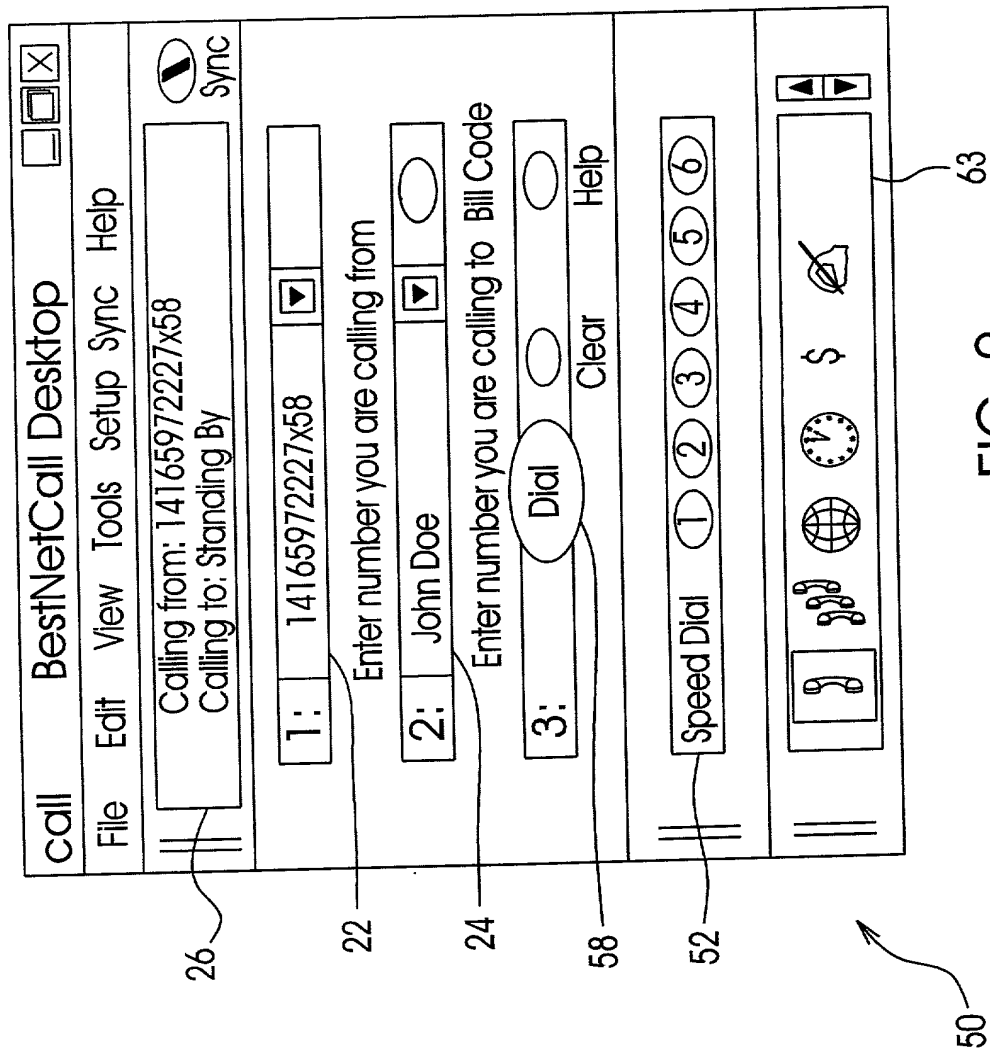
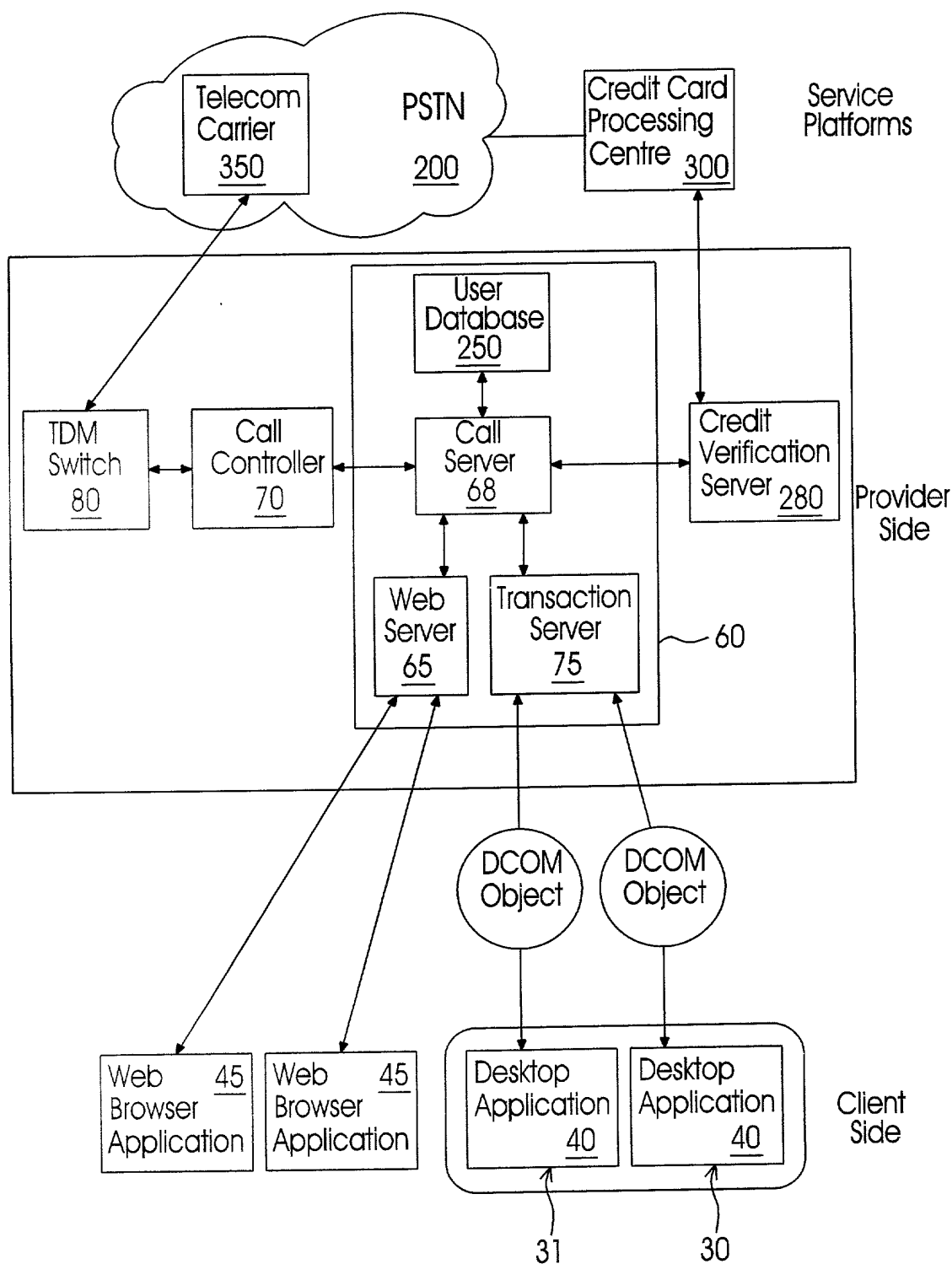


FIG. 2





**FIG. 3**

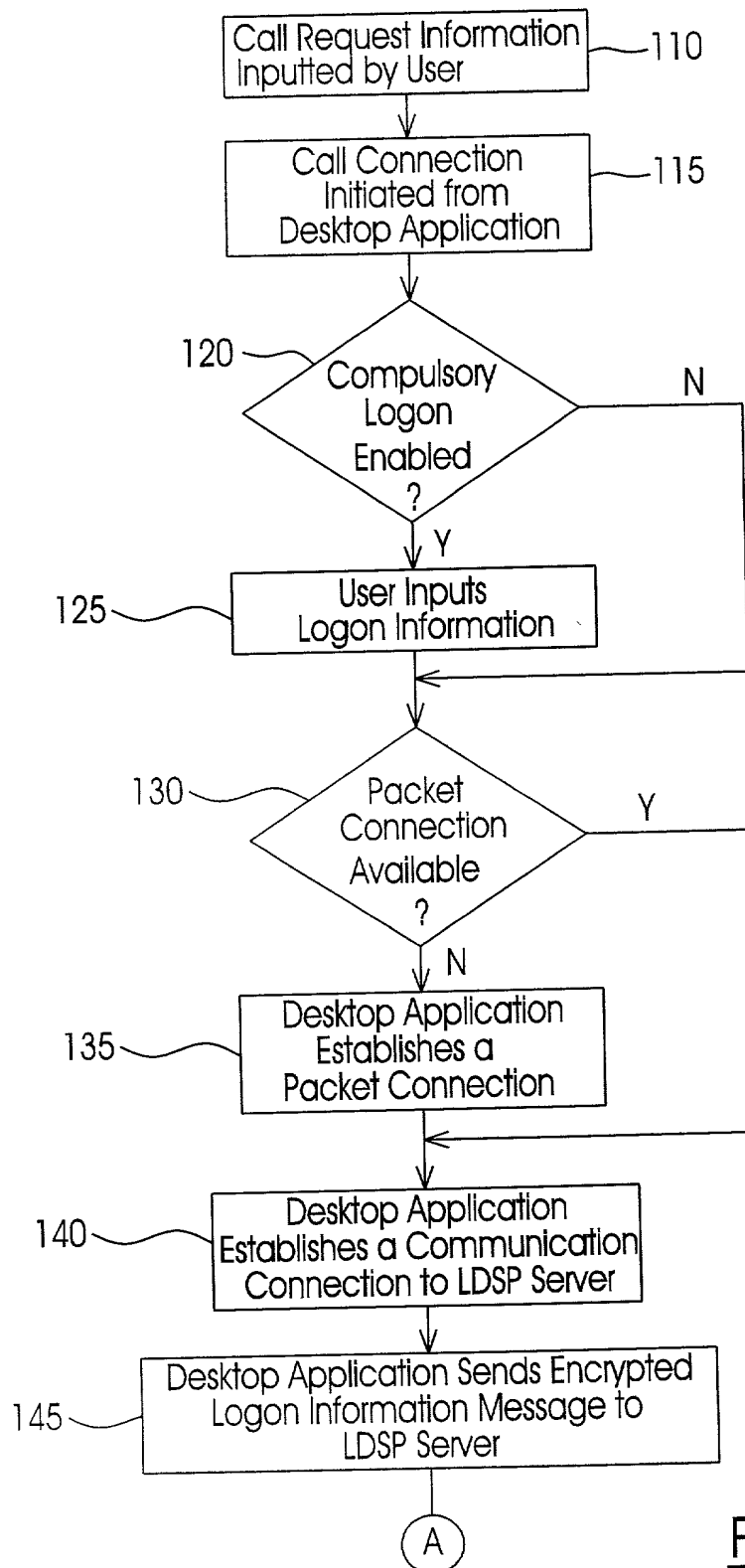


FIG. 4A

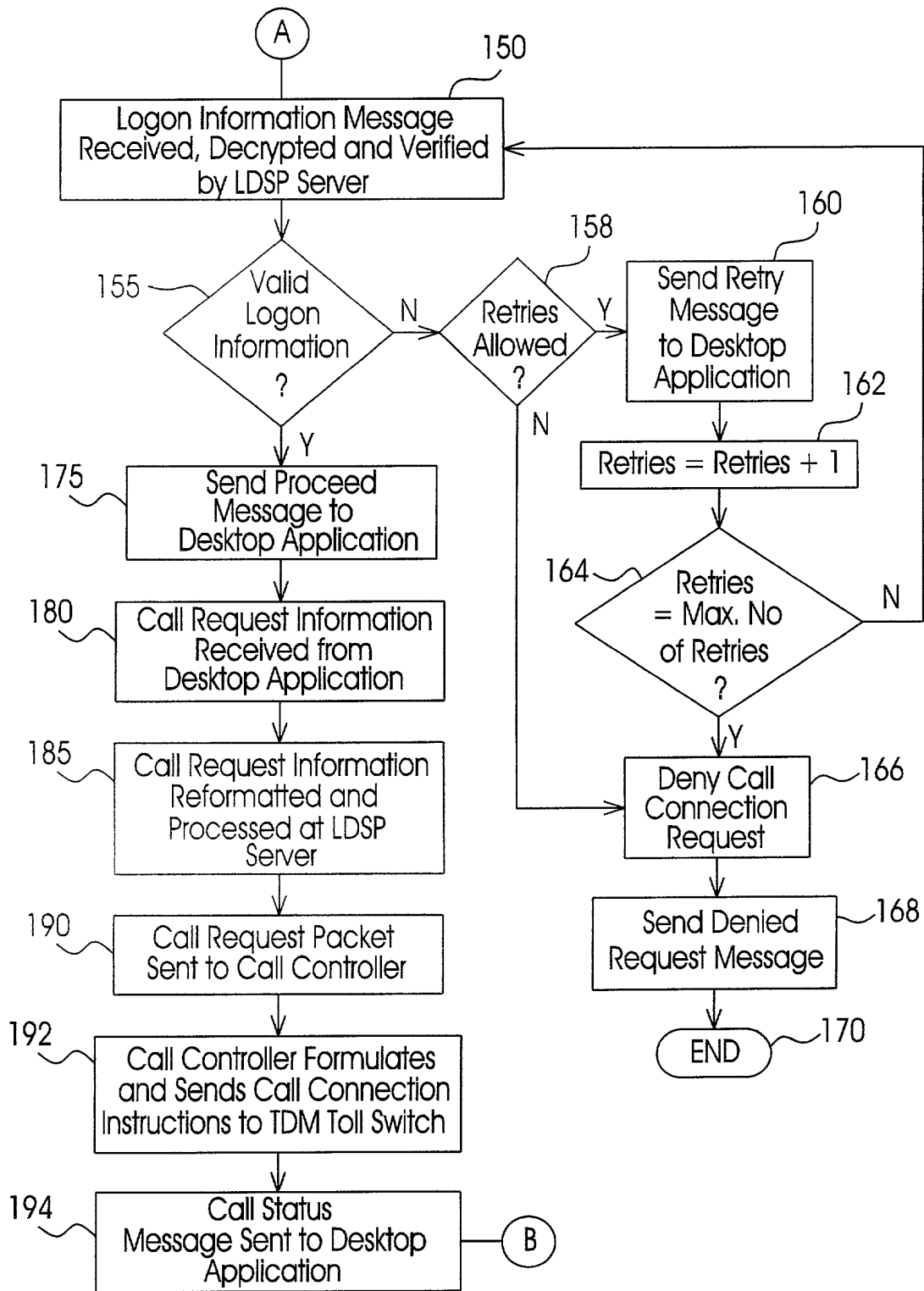


FIG. 4B

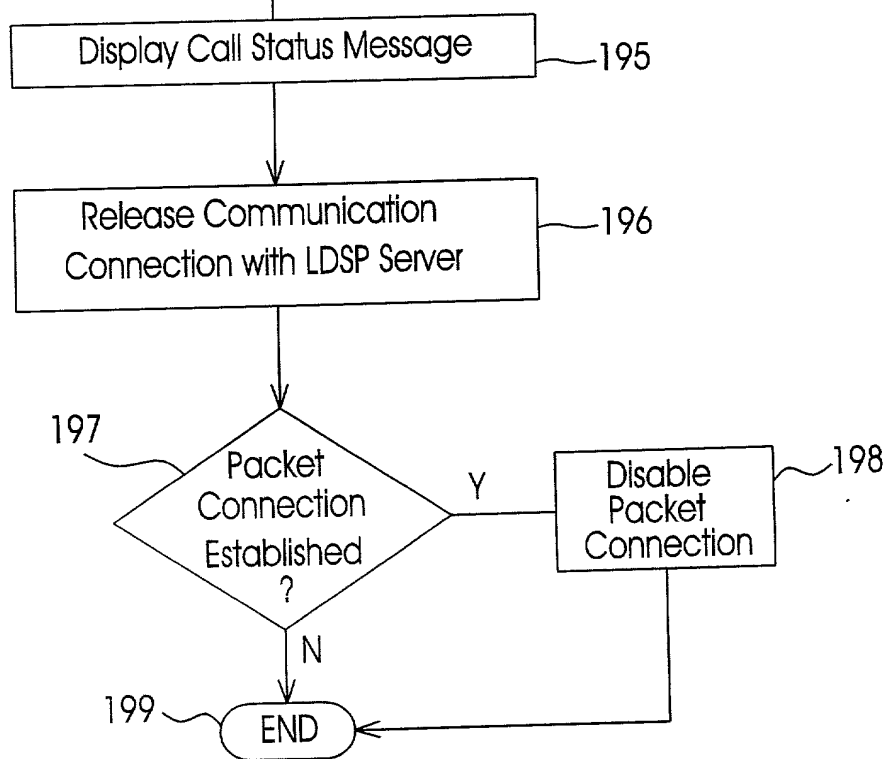
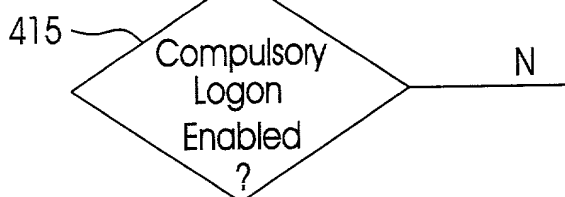


FIG. 4C

Synchronize Feature Selected on Desktop Application 410

### Synchronize Feature Selected on Desktop Application



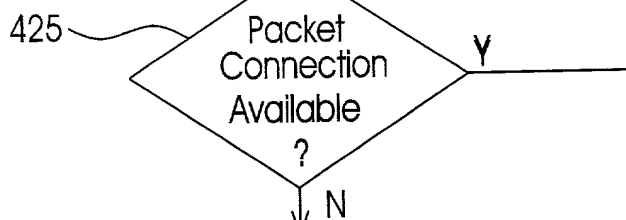
Compulsory  
Logon  
Enabled

N

Y

420

User Inputs  
Logon Information



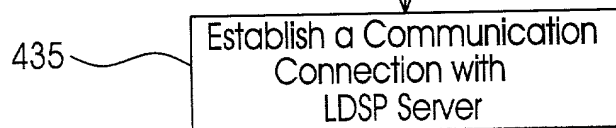
Packet  
Connection  
Available

Y

N

430

## Establish Packet Connection from Desktop Application



## Establish a Communication Connection with LDSP Server



Desktop Application Sends Encrypted Logon Information to LDSP Server

A

FIG. 5A

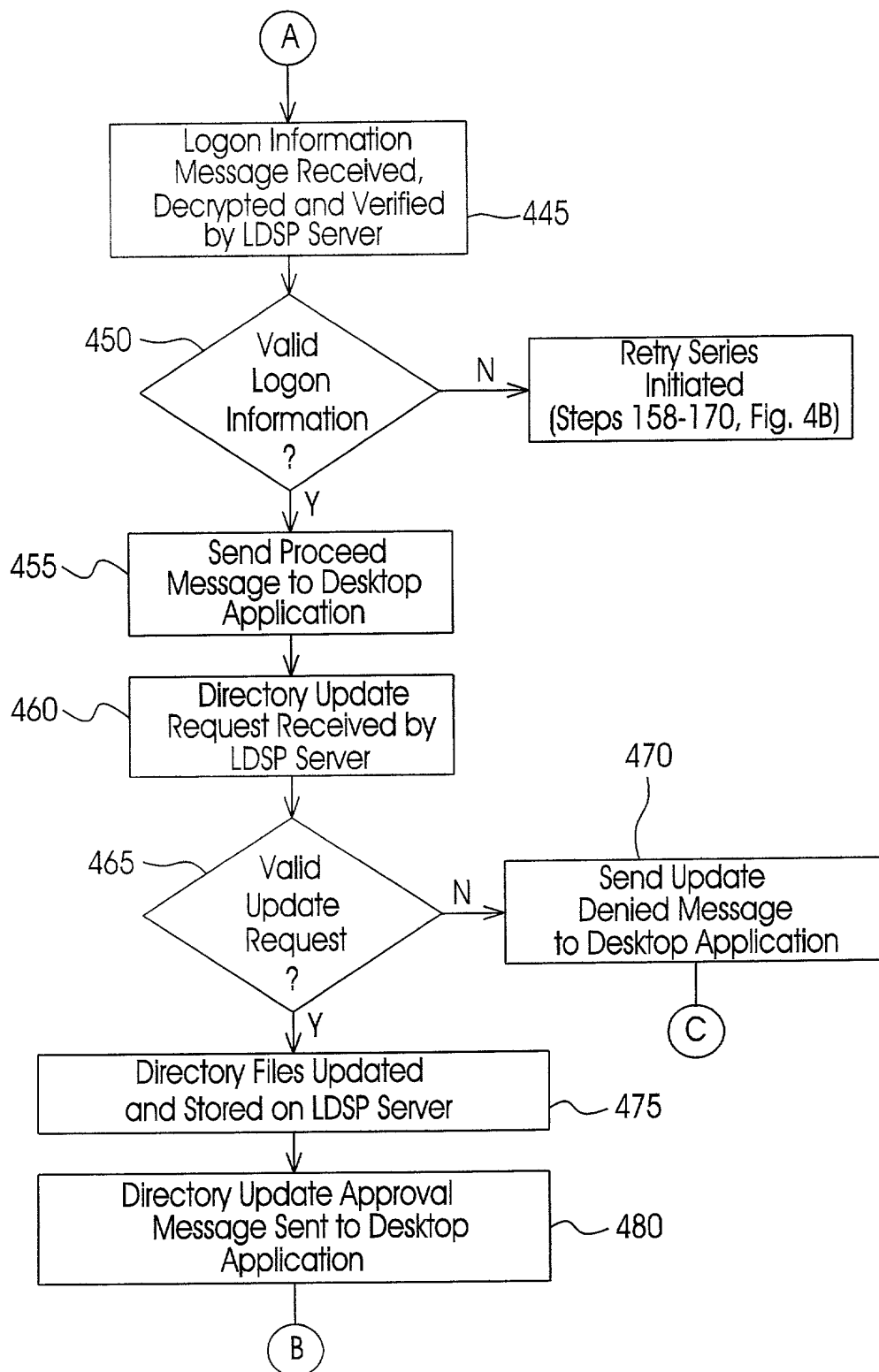


FIG. 5B

**Figure 1**

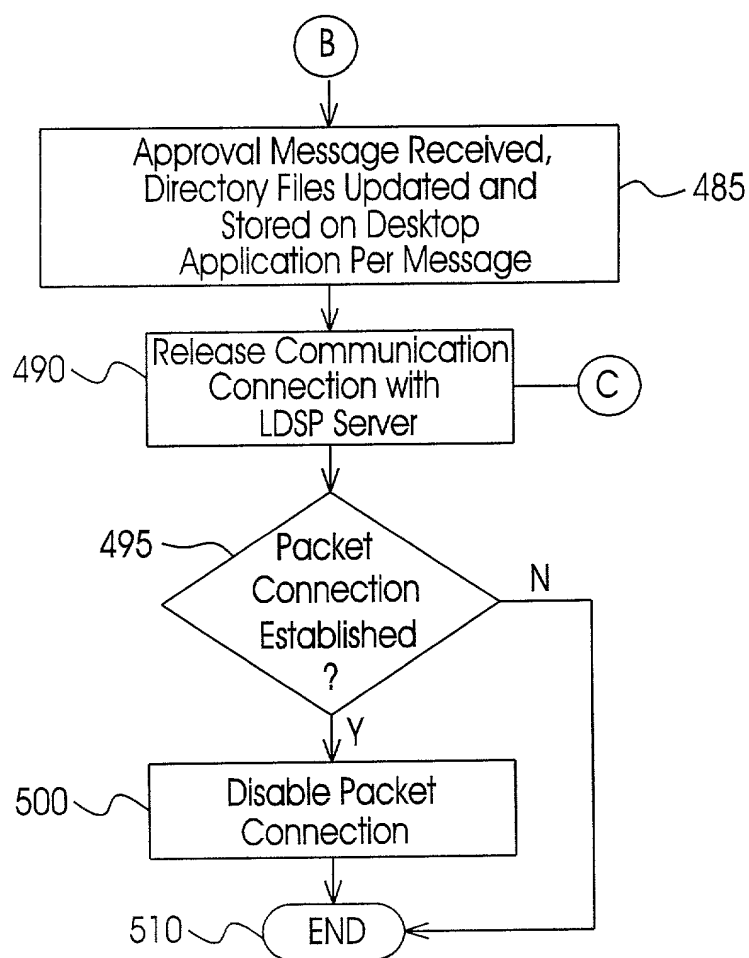


FIG. 5C

<p align="center"><b>COMBINED</b></p> <p align="center"><b>DECLARATION FOR UTILITY OR DESIGN</b></p> <p align="center"><b>PATENT APPLICATION (37 CFR 1.63)</b></p> <p align="center"><b>AND POWER OF ATTORNEY</b></p> <p><input checked="" type="checkbox"/> Declaration Submitted with Initial Filing      OR      <input type="checkbox"/> Declaration Submitted after Initial Filing (surcharge (37 CFR 1.16(e)) required)</p>	Attorney Docket Number <b>9-14798-2US</b>	
	First Named Inventor <b>Alexander C. LANG</b>	
	<i>Complete if known</i>	
	Application Number      _____	
	Filing Date      _____	
	Group Art Unit      _____	
	Examiner Name      _____	

**As a below named inventor, I hereby declare that:**

My residence, post office address and citizenship are as stated below next to my name.

I believe that I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

**SYSTEM AND METHOD FOR ESTABLISHING LONG DISTANCE CALL CONNECTIONS USING A DESKTOP APPLICATION**

the specification of which

☒ is attached hereto.

OR

☐ was filed on \_\_\_\_\_  
(mm/dd/yyyy)

as United States Application Number or PCT International Application Number \_\_\_\_\_

and was amended on \_\_\_\_\_ (if applicable).  
(mm/dd/yyyy)

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment specifically referred to above.

I acknowledge the duty to disclose information which is material to patentability as defined in 37 CFR 1.56.

I hereby claim foreign priority benefits under 35 U.S.C. 119(a)-(d) or 365(b) of any foreign application(s) for patent or inventor's certificate, or 365(a) of any PCT international application which designated at least one country other than the United States of America, listed below and have also identified below, by checking the box, any foreign application for patent or inventor's certificate, or of any PCT international application having a filing date before that of the application on which priority is claimed.

Prior Foreign Application Number(s)	Country	Foreign Filing Date (MM/DD/YYYY)	Priority Not claimed	Certified Copy Attached?	
				YES	NO
			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

☐ Additional foreign application numbers are listed on a supplemental priority data sheet PTO/SB/02B attached hereto.

I hereby claim the benefit under 35 U.S.C. 119(e) of any United States provisional application(s) listed below.

Application Number(s)	Filing Date (MM/DD/YYYY)	<input type="checkbox"/> Additional provisional application numbers are listed on a supplemental priority data sheet PTO/SB/02B attached hereto.



COMBINED DECLARATION FOR UTILITY OR DESIGN  
PATENT APPLICATION (37 CFR 1.63) AND POWER OF ATTORNEY

I hereby claim the benefit under 35 U.S.C. 120 of any United States application(s), or 365(c) of any PCT international application designating the United States of America, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States or PCT International application in the manner provided by the first paragraph of 35 U.S.C. 112, I acknowledge the duty to disclose information which is material to patentability as defined in 37 CFR 1.56 which became available between the filing date of the prior application and the national or PCT International filing date of this application.

U.S. Parent Application or PCT Parent Number	Parent Filing Date (MM/DD/YYYY)	Parent Patent Number (if applicable)

☐ Additional U.S. or PCT International application numbers are listed on a supplemental priority data sheet PTO/SB/02B attached hereto

As a named inventor, I hereby appoint the following registered practitioner(s) to prosecute this application and to transact all business in the Patent Trademark Office connected therewith:

☒ Customer Number: **20988**  
**SWABEY OGILVY RENAULT**



**20988**

PATENT TRADEMARK OFFICE

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**20988**

PATENT TRADEMARK OFFICE

or Bar Code Label

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under 18 U.S.C. 1001 and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

**Name of sole or First Inventor:**

Given Name (first and middle [if any])

Family Name or Surname

Alexander C.

LANG

Inventor's Signature

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17 August 2000

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Country

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☐ Additional inventors are being named on the supplemental Additional Inventor(s) PTO/SB/02A attached hereto.